World Headquarters
Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Date Printed 2/18/16
MSDS No: M00565

SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Cobalt Chloride Solution
Catalog Number: 1422249

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00565
Chemical Name: Not applicable
CAS Number: Not applicable
Additional CAS No. (for hydrated forms): Not applicable
Chemical Formula: Not applicable
Chemical Family: Mixture
Intended Use: Standard solution

2. HAZARDS IDENTIFICATION

GHS Classification:

Hazard categories: Corrosive to Metals: Met. Corr. 1 Acute Toxicity: Acute Tox. 4-Orl Skin Corrosion/Irritation: Skin Corr. 1B Respiratory or Skin Sensitization: Skin Sens.1 Respiratory or Skin Sensitization: Resp. Sens.1 Germ Cell Mutagenicity: Muta. 2 Carcinogenicity: Carc. 1B Reproductive Toxicity: Repr. 1B Hazardous to the Aquatic Environment: Aquatic Chronic 2

GHS Label Elements:

DANGER

Hazard statements: Suspected of causing genetic defects. May cause cancer. May damage the unborn child. Suspected of damaging fertility. May be corrosive to metals. Harmful if swallowed. Causes severe skin burns and eye damage. May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Suspected of causing genetic defects by inhalation. May cause cancer by inhalation. May damage fertility. Suspected of damaging the unborn child. Toxic to aquatic life with long lasting effects.

Precautionary statements: Wear protective gloves / protective clothing / eye protection / face protection. Obtain special instructions before use. Do not breathe dust/fume/gas/mist/vapours/spray. Do no eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Handle environmental release according to local, state, federal, provincial requirements. Wear eye protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician. IF INHALED: Remove victim/person to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage. Collect spillage. Dispose of contents/container according to state, local, federal or national regulations.

HMIS:

Health: 3*
Flammability: 0
Reactivity: 0
Protective Equipment: X - See protective equipment, Section 8.

NFPA:
Health: 3
Flammability: 0
Reactivity: 0
Symbol: Not applicable
WHMIS Hazard Classification: Class E - Corrosive material Class D, Division 2, Subdivision A - Very toxic materials (other toxic effects) Class D, Division 2, Subdivision B - Toxic material (other toxic effects)
WHMIS Symbols: Corrosive Other Toxic Effects

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Components according to GHS:

Cobalt Chloride

CAS Number: 7646-79-9
Chemical Formula: $CoCl_2 \cdot 6H_2O$
GHS Classification: Acute Tox. 3-Orl, H301; Skin Sens. 1, H317; Resp. Sens. 1, H334; Muta. 2, H341; Carc. 2, H351; Repr. 1B, H360; Aquatic Chronic 1, H410
Percent Range (Trade Secret): < 5.0
Percent Range Units: weight / weight
PEL: 0.1 mg Co/m^3
TLV: 0.02 mg Co/m^3

WHMIS Symbols: Other Toxic Effects

Hydrochloric Acid

CAS Number: 7647-01-0
Chemical Formula: HCl
GHS Classification: Met. Corr. 1, H290; Acute Tox. 4-Orl, H302; Acute Tox. 5-Inh, H333; Skin Corr. 1B, H314; STOT Single 3, H335
Percent Range (Trade Secret): 0.5 - 1.5
Percent Range Units: weight / weight
PEL: 5 ppm ceiling
TLV: 5 ppm ceiling

WHMIS Symbols: Corrosive

Hazardous Components according to GHS: No

Demineralized Water

CAS Number: 7732-18-5
Chemical Formula: H_2O
GHS Classification: Not a dangerous substance according to GHS.
Percent Range (Trade Secret): > 90.0
Percent Range Units: weight / weight
PEL: Not established
TLV: Not established

WHMIS Symbols: Not applicable

4. FIRST AID MEASURES

General Information: In the event of exposure, show this Material Safety Data Sheet and label (where possible) to a doctor.
Advice to doctor: Treat symptomatically.
Eye Contact: Immediately flush eyes with water for 15 minutes. Call physician.
Skin Contact (First Aid): Wash skin with plenty of water. Call physician if irritation develops. Remove contaminated clothing.

Inhalation: Remove to fresh air. Give artificial respiration if necessary. If you feel unwell, contact a physician If concerned contact a physician.
Ingestion (First Aid): Never give anything by mouth to an unconscious person. Do not induce vomiting. Rinse mouth with plenty of water. Give large quantities of water. Call physician immediately.

5. FIRE FIGHTING MEASURES

Flammable Properties: Material will not burn. During a fire, irritating and highly toxic gases may be generated by thermal decomposition.
Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.
Extinguishing Media: Use media appropriate to surrounding fire conditions
Extinguishing Media NOT To Be Used: Not applicable
Fire / Explosion Hazards: Contact with metals gives off hydrogen gas which is flammable May react violently with: This product will not burn or explode. strong oxidizers strong reducers strong acids strong bases
Hazardous Combustion Products: This material will not burn.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.
Containment Technique: Stop spilled material from being released to the environment. Absorb spilled liquid with non-reactive sorbent material. Releases of this material may contaminate the environment.
Clean-up Technique: Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up spilled material into a large beaker and dissolve with water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Dispose of material in government approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.
Evacuation Procedure: Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.
DOT Emergency Response Guide Number: 157

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes skin clothing Wash thoroughly after handling. Use with adequate ventilation. Do not breathe mist or vapors. Maintain general industrial hygiene practices when using this product.
Storage: Keep this product in its original container when not in use. Keep container tightly closed when not in use. Protect from: heat Keep away from: acids / acid fumes. bases oxidizers reducers metals
Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.
Personal Protective Equipment:
Eye Protection: chemical splash goggles
Skin Protection: nitrile gloves lab coat
Inhalation Protection: adequate ventilation
Precautionary Measures: Avoid contact with: eyes skin clothing Wash thoroughly after handling. Use with adequate ventilation. Do not breathe: mist/vapor Protect from: heat Keep away from: acids/acid fumes bases oxidizers reducers metals
TLV: Not established
PEL: Not established
For Occupational Exposure Limits (OEL) for ingredients, see section 3 - Composition/Information on Ingredients.:

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, red liquid
Physical State: Liquid
Molecular Weight: Not applicable
Odor: Odorless
Odor Threshold: Not applicable
pH: 1.3
Metal Corrosivity:
Corrosivity Classification: Classified as corrosive to metals.
Steel: 0.103 in/yr
Aluminum: 0.316 in/yr
Specific Gravity/ Relative Density (water = 1; air =1): 1.025
Viscosity: ~ 1.0 mPa∗s
Solubility:
Water: Soluble
Acid: Soluble
Other: Soluble in alcohol, ether and acetone
Partition Coefficient (n-octanol / water): Not applicable
Coefficient of Water / Oil: Not applicable
Melting Point: Estimation: -7 °C (20 °F)
Decomposition Temperature: Not determined
Boiling Point: Estimation: 102 °C (215 °F)
Vapor Pressure: Estimation: 17.06 mm Hg (2.22 kPa) at 20 °C (68 °F)
Vapor Density (air = 1): Estimation: 0.63 at 20 °C (68 °F)
Evaporation Rate (water = 1): Estimation: 0.95 at 20 °C (68 °F)
Volatile Organic Compounds Content: Not applicable
Flammable Properties: Material will not burn. During a fire, irritating and highly toxic gases may be generated by thermal decomposition.
Flash Point: Not applicable
Method: Not applicable
Flammability Limits:
Lower Explosion Limits: Not applicable
Upper Explosion Limits: Not applicable
Autoignition Temperature: Not applicable
Explosive Properties:
Not classified according to GHS criteria.
Oxidizing Properties:
Not classified according to GHS criteria.
Reactivity Properties:
Not classifed as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.
Gas under Pressure:
Not classified according to GHS criteria.

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10. STABILITY AND REACTIVITY

Chemical Stability: Stable when stored under proper conditions.
Mechanical Impact: None reported
Static Discharge: None reported.
Reactivity / Incompatibility: May react violently in contact with: acids alkalies oxidizers reducers sodium nitrate metals
Hazardous Decomposition: Contact with metals may release flammable hydrogen gas. Heating to decomposition releases: hydrogen chloride metal oxides
Conditions to Avoid: Extreme temperatures Evaporation Contact with acid or acid fumes Contact with oxidizers Incompatibles Metal contamination Poor Ventilation

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11. TOXICOLOGICAL INFORMATION

Toxicokinetics, Metabolism and Distribution: No information available for mixture.
Toxicologically Synergistic Products: None reported
Acute Toxicity: Acute Toxicity Estimate (ATE) - Calculated from Ingredient Toxicity Data Route Data Given Below Based on classification principles, the classification criteria are not met.
Oral Rat LD50 = 8629 mg/kg
Specific Target Organ Toxicity - Single Exposure (STOT-SE): Based on classification principles, the classification criteria are not met. Summary of findings reported in the literature follow.
Hydrochloric Acid: Oral Man LDLo = 2.857 mg/kg/Hypotension, repsiratory depression, changes in esophagus; Inhalation Human TCLo = 50 mg/m^3/Cough, respiratory depression; Cobalt Chloride: Oral Rat LD50 = 766 mg/kg/Tremor, hypermotility, diarrhea, weigh
Specific Target Organ Toxicity - Repeat Exposure (STOT-RE): Based on classification principles, the classification criteria are not met. Summary of findings reported in the literature follow.
Hydrochloric Acid: Inhalation Rat TCLo = 0.685 mg/m^3/84 days continuous/Muscle contraction or spasticity, changes in urine composition and true cholinesterase; Cobalt Chloride: Subcutaneous Rat TDLo = 120 mg/kg/2 days/Liver changes; Biochemical change
Skin Corrosion/Irritation: Irritating to skin.
Eye Damage: Corrosive to eyes. Assessment based on pH
Sensitization: Respiratory Sensitizer Skin Sensitizer Contains a sensitizing compound. Testing data given below.
Cobalt Chloride: Skin - Human - 1 pph/48 hr/Dermatitis, allergic
CMR Effects/Properties (carcinogenic, mutagenic or toxic to reproduction): Contains Listed Carcinogen Contains a reproductive toxin. Data supporting mutagenicity was found. Summary of findings reported in the literature follow.
Cobalt Chloride: Human Lymphocyte - DNA Damage - 4.5 mg/L; Mouse Mammary Gland - Mutation in somatic cells - 0.002 mmol/L; Oral Mouse TDLo = 182 mg/kg/Paternal effects: testes, epididymis, sperm duct, prostate, seminal vesicl, Cowper's gland, accessory gl
Hydrochloric Acid: Inhalation Rat TCLo = 450 mg/m^3/1 hr/Fetotoxicity, Specific Developmental Abnormalities: Homeostatis. Cytogenetic Analysis Hamster Lung 30 mmol/L; Cytogenetic Analysis Hamster Ovary 8 mmol/L; DNA Repair Escherichia coli 0.03 mg/well
An ingredient of this mixture is: IARC Group 2B: Experimental Carcinogen IARC Group 3: Non-classifiable
Cobalt and Cobalt compounds Hydrochloric acid
An ingredient of this mixture is: NTP Listed Group 2B: Experimental Carcinogen
Colbalt sulfate and other soluble cobalt(II) salts
This product does NOT contain any OSHA listed carcinogens.
Symptoms/Effects:
Ingestion: May cause: irritation of the mouth and esophagus gastrointestinal tract irritation nausea vomiting
Large doses may cause: headache flushing hypotension nerve deafness ringing in the ears (tinnitus)
Inhalation: May cause: irritation of nose and throat
Skin Absorption: No effects anticipated
Chronic Effects: Chronic overexposure may cause lung damage a goiter damage to the pancreas thyroid disorders
Medical Conditions Aggravated: Allergies or sensitivity to cobalt Pre-existing: Eye conditions Respiratory conditions Skin conditions

12. ECOLOGICAL INFORMATION

Product Ecological Information: --
No ecological data available for this product. Do not place in landfil. Recycle appropriately. Do not release into the environment. No bioaccumulation potential Mobility in soil: Highly mobile
Method Used for Estimation of Aquatic Toxicity of Mixture Summation Method M-factor (Multiplier) for highly toxic ingredients: 1
Ingredient Ecological Information: Cobalt Chloride: 96 hr Cyprinus Carpio LC50 = 0.33 mg/L; 48 hr Daphnia magna EC50 = 1.1-1.6 mg/L; 96 hr Chlorella vulgaris ErC50 = 0.5 mg/L
Hydrochloric Acid: 96 hr Gambusia affinis LC50 = 282 mg/L; 48 hr Crustaceans LC50 = 240 mg/L; 48 hr Crustaceans EC50 = 100 mg/L; 48 hr Daphnia magna = 0.492 mg/L; 72 hr Daphnia magna LC80 = 56 mg/L; 72 hr Selenastrum capriornutum ErC50 = 0.492 mg/L
CEPA categorization for ingredients are as follows:

Cobalt Chloride: Persistent and inherently toxic to aquatic organisms; Hydrochloric Acid, Water: Persistent, not bioaccumulative or inherently toxic to aquatic organisms.

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: D002
Special Instructions (Disposal): Check with local municipal and state authorities and waste contractors for pertinent local information regarding the proper disposal of chemicals.
Empty Containers: Working in a well-ventilated area, Rinse three times with an appropriate solvent. Collect rinsate and dispose of according to local, state or federal regulations. In the US, rinsate from empty containers is classified as hazardous waste and should be disposed of at an E.P. A. approved facility. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste. Dispose of empty container as normal trash.
NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information. In Europe: Chemical and analysis solutions must be disposed of in compliance with the respective national regulations. Product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system.

14. TRANSPORT INFORMATION

D.O.T.:
D.O.T. Proper Shipping Name: Hydrochloric Acid Solution
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Hazard Class: 8
Subsidiary Risk: NA
ID Number: UN1789
Packing Group: III
T.D.G.:
Proper Shipping Name: Hydrochloric Acid Solution
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Hazard Class: 8
Subsidiary Risk: NA
UN Number/PIN: 1789
Packing Group: III
I.C.A.O.:
I.C.A.O. Proper Shipping Name: Hydrochloric Acid Solution
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Hazard Class: 8
Subsidiary Risk: NA
ID Number: UN1789
Packing Group: III
I.M.O.:
Proper Shipping Name: Hydrochloric Acid Solution
--
Hazard Class: 8
Subsidiary Risk: NA
ID Number: UN1789
Packing Group: III
Marine Pollutant:
Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:

O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

E.P.A.:

S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard

S.A.R.A. Title III Section 313 (40 CFR 372): This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Cobalt Compound

302 (EHS) TPQ (40 CFR 355): Not applicable

304 CERCLA RQ (40 CFR 302.4): 5000 lbs. Hydrochloric Acid

304 EHS RQ (40 CFR 355): Not applicable

Clean Water Act (40 CFR 116.4): Hydrochloric Acid - RQ 5000 lbs.

RCRA: Contains no RCRA regulated substances.

State Regulations:

California Prop. 65: No Prop. 65 listed chemicals are present in this product.

Identification of Prop. 65 Ingredient(s): None

California Perchlorate Rule CCR Title 22 Chap 33: Not applicable

Trade Secret Registry: Not applicable

National Inventories:

U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

CAS Number: Not applicable

Canadian Inventory Status: All ingredients of this product are DSL Listed.

EEC Inventory Status: All ingredients used to make this product are listed on EINECS / ELINCS.

Australian Inventory (AICS) Status:

New Zealand Inventory (NZIoC) Status: All components either listed or exempt.

Korean Inventory (KECI) Status: All components of this product are either listed, listed as the anhydrous compound or exempt.

Japan (ENCS) Inventory Status: All components either listed or exempt.

China (PRC) Inventory (MEP) Status: All components either listed or exempt.

16. OTHER INFORMATION

References: Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Vendor Information. Technical Judgment. In-house information. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989.

Complete Text of H phrases referred to in Section 3: H341 Suspected of causing genetic defects. H350 May cause cancer. H360Df May damage the unborn child. Suspected of damaging fertility. H290 May be corrosive to metals. H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H317 May cause an allergic skin reaction. H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. H360Fd1 May damage fertility. Suspected of damaging the unborn child. H411 Toxic to aquatic life with long lasting effects.

Revision Summary: . Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

Date of MSDS Preparation:

Day: 23

Month: February

Year: 2015

MSDS Prepared: MSDS prepared by Product Compliance Department extension 3350

CCOHS Evaluation Note: It is offered under exemption from WHMIS labeling as specified in the Controlled Products Regulation (CPR) Section 17.

Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.